CLAIMS

1. A system for estimating a self posture of a leg type moving robot controlled to follow a determined desired gait, comprising:

a posture angular velocity detecting means for detecting or estimating an actual posture angular velocity of a predetermined part of the robot;

an accelerometer mounted on the robot;

a motional acceleration estimating means for determining an estimated motional acceleration as an estimated value of an acceleration of the accelerometer itself that is generated by a motion of the robot by using a motional state amount of the robot that includes at least one of a desired motion of the desired gait, a detected displacement value of a joint of the robot, and a desired displacement value of the joint; and

a posture estimating means for estimating an actual posture of the predetermined part on the basis of at least a detected acceleration value by the accelerometer, the estimated motional acceleration, and the detected or estimated actual posture angular velocity.

2. A system for estimating a self posture of a leg type moving robot controlled to follow a determined desired gait, comprising:

an accelerometer mounted on the robot;

a posture angular velocity detecting means for detecting or estimating an actual posture angular velocity

of a predetermined part of the robot;

a posture estimating means for determining an estimated posture angle value as an estimated value of an actual posture of the predetermined part on the basis of at least the detected or estimated actual posture angular velocity;

a posture rotational error calculating means for determining a temporal variation of a posture rotational error as a posture rotational error variation, the posture rotational error variation indicating a difference between the estimated posture angle value and a desired posture angle of the predetermined part in the desired gait;

a rotational center determining means for determining a rotational center of a change in the posture rotational error; and

a motional acceleration estimating means for determining an estimated motional acceleration as an estimated value of an acceleration of the accelerometer itself generated by a motion of the robot, assuming that the robot rotates about the rotational center with the posture rotational error variation,

wherein the posture estimating means determines the estimated posture angle value while correcting it on the basis of at least a detected acceleration value by the accelerometer and the estimated motional acceleration.

3. The system for estimating a self posture of a leg type moving robot according to Claim 2, wherein the

motional acceleration estimating means comprises a means
for determining a second coordinate system formed by
rotating a first coordinate system, which is a coordinate
system describing the desired gait, about the rotational

5   center by the posture rotational error variation, and the
estimated motional acceleration is determined such that an
acceleration of the accelerometer itself observed from the
first coordinate system that is determined from at least
one of a desired motion of the desired gait, a detected

10   displacement value of a joint of the robot, and a desired
displacement value of the joint, and an acceleration of
the accelerometer itself when the accelerometer moving at
the estimated motional acceleration is observed from the
second coordinate system are the same.

15   4.   The system for estimating a self posture of a leg
type moving robot according to any one of Claims 1 to 3,
wherein the posture estimating means comprises:

an integrating means for determining an estimated
posture angle value as an estimated value of an actual

20   posture of the predetermined part by integrating an input
that includes at least a detected value of the posture
angular velocity;

a posture angle error estimating means for estimating
an error of the estimated posture angle value on the basis

25   of a difference between a detected acceleration value by
the accelerometer and the estimated motional acceleration;
and

an input correcting means for correcting an input of the integrating means so as to bring the estimated error close to zero.

5. The system for estimating a self posture of a leg type moving robot according to Claim 1 or 2, wherein the predetermined part is a body of the robot.

6. The system for estimating a self posture of a leg type moving robot according to Claim 2, wherein the estimated posture angle value corrected by the posture estimating means is an estimated value of an inclination angle of the predetermined part relative to a vertical direction.